DRAFT

Management of Mine Drainage

Description

Historical mining in the Sacramento and San Joaquin River watersheds has left numerous abandoned mines that produce acid mine drainage (AMD) that can contain acid and heavy metals, such as cadmium, copper, and zinc, that are toxic to aquatic life. Other mines drain mercury, which is a hazard to both human and aquatic life. In some cases, mine drainage has caused direct mortality to resident and anadromous fish in the Sacramento River. In addition, drainage can destroy salmon eggs and kill fry in areas where spawning habitat is downstream from the drainage.

The management of mine drainage includes actions to prevent, segregate, and treat mine drainages. Preventative technologies are aimed at preventing the formation of AMD by diverting local streams around the formation zone of AMD and by covering such zones with impervious materials. Segregative technologies focus on containing AMD onsite and preventing it from entering surface waters by sealing mine portals or constructing surface impoundments. Treatment technologies use chemical precipitation, ion exchange, and wetland processes to remove the hazardous materials from AMD before it enters surface waters.

This category includes the following actions:

- manage discharges from abandoned mines, and
- remediate mining sites discharging pollutants.

Purpose

Managing mine drainage is intended to reduce the amount of acid and heavy metal contamination carried in AMD that enters surface waters and ultimately the Delta. Managing mine drainage would reduce the number of fish killed and increase salmon recruitment by avoiding pulses of heavy metal pollution throughout salmon spawning and rearing habitats.

Constraints

Regulating discharges from abandoned mines is under the authority of respective regional water quality control boards. Many of the mines have been classified as hazardous waste sites under both federal and state toxic cleanup laws. Financial and legal constraints are the primary challenges in mine drainage remediation. In many cases, responsible parties have not been identified or do not have the financial resources to clean up or prevent further drainage from the mining site.

Linkage to other CALFED Action Categories

Managing mine drainage is linked to complementary actions to improve water quality conditions in the Bay-Delta system. Implementing more stringent controls on point- and nonpoint-source discharges, and addressing agricultural drainage issues are examples of linkages to CALFED action categories.